Space Weather Forecast

Issued on Tuesday, 28 May 2024 at 00:18 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Ongoing likelihood of further Moderate to Strong flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: High with one Strong flare observed, peaking 27/0708UTC from over the southeastern limb, almost certainly from the returning hyperactive sunspot from a couple of weeks ago. This is now in the process of rotating onto the southeast limb and further flares remain likely. There are eight other regions currently on the Earth-facing disc, however most are small and simple. The exception is a moderately sized region in the northeast. Gradual growth has led to an increasing area, along with the development of mixed magnetic polarities within the spot. Some minimal growth has also been observed in a couple of other spots on the northeast disc.

No Earth-directed Coronal Mass Ejections (CMEs) have been observed, with all previous observed CMEs assessed as missing. The moderately fast CME from today's strong flare is directed away from Earth, due to the east limb location of the source.

Solar Wind / Geomagnetic Activity: Solar wind speeds briefly rose to be slightly elevated between 27/0130-0520 UTC, but then eased to be mainly background at 350-380 km/s. Interplanetary Magnetic Field (IMF) was weak with the north-south component also weakly varying, but favouring a negative (southward) orientation. Geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to High activity is expected with a likelihood of further Moderate class flares, and a chance of further isolated Strong-class flares. These most likely from the returning spot, now on the southeast limb, but also potentially the moderately sized spot in the northeast.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Solar winds may see a brief increase from a weak coronal hole fast wind on day 1 (28 May), however only a limited enhancement is likely before easing back to background day 2 onward (29 May). This enhancement is low confidence as well, with the potential for background winds to persist. Mainly Quiet geomagnetic activity expected with Unsettled intervals, and a slight chance of Active with any fast wind onset day 1.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring. This is despite the potential for Strong flares, with both sunspots in a less likely position

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	75	75	70	70
Very Active	R3 to R5 X	Yes	25	25	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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